

INTERNATIONAL SEARCH REPORT

Intel Application No
PCT/GB2004/004047

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 F25J1/02 F25B9/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 F25J F25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 611 216 A (HOUSER CLARENCE G ET AL) 18 March 1997 (1997-03-18) column 2, line 22 - column 3, line 13 column 11, line 26 - line 45; figures -----	1-10,26
P,X	FOGLIETTA J H ET AL: "CONSIDER DUAL INDEPENDENT EXPANDER REFRIGERATION FOR LNG PRODUCTION NEW METHODOLOGY MAY ENABLE REDUCING COST TO PRODUCE STRANDED GAS" HYDROCARBON PROCESSING, GULF PUBLISHING CO. HOUSTON, US, vol. 83, no. 1, January 2004 (2004-01), pages 39-44, XP001180157 ISSN: 0018-8190 figure 7 ----- -/-	1,6,10, 26

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the Invention
- "X" document of particular relevance; the claimed Invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the International search

14 February 2005

Date of mailing of the International search report

18.03.2005

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category ^a	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/005722 A1 (HUDSON HANK M ET AL) 9 January 2003 (2003-01-09) figures ----- US 4 539 028 A (LEROUX DIDIER ET AL) 3 September 1985 (1985-09-03) figure 1 ----- US 4 094 655 A (KRIEGER HEINRICH) 13 June 1978 (1978-06-13) figure 1 ----- HEINZ BAUER: "A novel Concept" INTERNATIONAL JOURNAL OF HYDROCARBON ENGINEERING, PALLADIAN PUBLICATIONS, ELSTEAD, GB, May 2002 (2002-05), pages 59-63, XP009025584 ISSN: 1364-3177 figures 2,5 ----- WO 01/69149 A (STATOIL ; PAUROLA PENTTI (NO); FREDHEIM ARNE OLAV (NO)) 20 September 2001 (2001-09-20) the whole document ----- X PARADOWSKI H ET AL: "La liquéfaction des gaz associés" INTERNATIONAL CONFERENCE ON LNG, XX, XX, 15 May 1983 (1983-05-15), page Complete, XP002138034 figure 3; table 6 ----- X US 4 339 253 A (CAETANI ENZO ET AL) 13 July 1982 (1982-07-13) column 18, line 9 - line 19; figure 4 ----- X US 6 449 984 B1 (PARADOWSKI HENRI) 17 September 2002 (2002-09-17) column 14, line 44 - line 59; figure 1; table ----- A US 4 548 629 A (CHIU ET AL) 22 October 1985 (1985-10-22) column 3, lines 24-26 column 6, lines 42-45 column 7, lines 60-63; figures ----- P,X US 6 722 157 B1 (EATON ANTHONY P ET AL) 20 April 2004 (2004-04-20) the whole document -----	1,3,4,6, 8,10,26 1,2,5,6, 9,10,26 1,2,5,6, 9,10,26 7,9 8,14-25 11-25 11-25 11,13, 15-25 8,14,15, 25 25 14-24

INTERNATIONAL SEARCH REPORT

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PCT/GB2004/004047

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of Invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,
no additional fees are to be refunded.

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10,26

A method of liquefying a hydrocarbon-rich gas by three cascaded refrigeration circuits, each circuit comprising a compressor, wherein at least part of the flow of refrigerant from the second circuit is used for the preliminary cooling of the hydrocarbon-rich gas in the first refrigeration stage.

2. claims: 11-25

A method of liquefaction comprising a plurality cascaded refrigeration circuits, each circuit comprising a compressor, wherein each compressor having a substantially equal share of the total load.

INTERNATIONAL SEARCH REPORT

Information on patent family members

 International Application No
PCT/GB2004/004047

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 5611216	A 18-03-1997	AU 680801 B1 CA 2189590 A1 EG 21454 A ES 2143354 A1 ID 15805 A NO 965490 A OA 10390 A RU 2170894 C2		07-08-1997 21-06-1997 31-10-2001 01-05-2000 07-08-1997 23-06-1997 28-11-2001 20-07-2001
US 2003005722	A1 09-01-2003	EG 23257 A NL 1020810 C2 NL 1020810 A1 US 2004187520 A1 BR 0210928 A CA 2448884 A1 EP 1397629 A1 JP 2004530858 T TW 580554 B WO 02101307 A1 ZA 200309504 A		31-10-2004 15-06-2004 10-12-2002 30-09-2004 05-10-2004 19-12-2002 17-03-2004 07-10-2004 21-03-2004 19-12-2002 02-08-2004
US 4539028	A 03-09-1985	FR 2545589 A1 AU 560904 B2 AU 2746084 A CA 1226206 A1 DE 3462945 D1 EP 0125980 A2 ES 8502536 A1 IN 161272 A1 JP 1900263 C JP 6027618 B JP 60099982 A NO 841803 A ,B, OA 7764 A SU 1627097 A3		09-11-1984 16-04-1987 08-11-1984 01-09-1987 07-05-1987 21-11-1984 01-04-1985 07-11-1987 27-01-1995 13-04-1994 03-06-1985 07-11-1984 30-08-1985 07-02-1991
US 4094655	A 13-06-1978	US 3964891 A		22-06-1976
WO 0169149	A 20-09-2001	AU 4084701 A BR 0109253 A CA 2402526 A1 WO 0169149 A1 NO 20024383 A US 2003089125 A1		24-09-2001 24-12-2002 20-09-2001 20-09-2001 14-11-2002 15-05-2003
US 4339253	A 13-07-1982	FR 2471566 A1 AR 228349 A1 AU 536389 B2 AU 6531880 A BE 886593 A1 CA 1142847 A1 DE 3046549 A1 EG 17909 A ES 8200469 A1 GB 2067734 A ,B IN 155149 A1 IT 1210012 B JP 1047718 B		19-06-1981 28-02-1983 03-05-1984 18-06-1981 11-06-1981 15-03-1983 27-08-1981 30-06-1991 16-01-1982 30-07-1981 05-01-1985 06-09-1989 16-10-1989

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte	rial Application No
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PCT/GB2004/004047

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 4339253	A	JP	1565919 C	25-06-1990
		JP	56100279 A	12-08-1981
		MY	51186 A	31-12-1986
		NL	8006736 A ,B,	16-07-1981
		NO	803741 A ,B,	15-09-1981
		OA	6667 A	30-09-1981
		SU	1355138 A3	23-11-1987
<hr/>				
US 6449984	B1	17-09-2002	FR	2826969 A1
			BR	0205687 A
			EA	4127 B1
			EP	1273860 A2
			WO	03004951 A1
			NO	20030581 A
<hr/>				
US 4548629	A	22-10-1985	GB	2147984 A ,B
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US 6722157	B1	20-04-2004	WO	2004085940 A1
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